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Thus, Gumri, where Kazi-Mullah, the prophet and mountain chief, fell in 1832, was followed by Ahúlko, Dango, and recently Veden, which have successively been abandoned by Shamyl and garrisoned by Russian troops.

In closing my narrative I wish you to understand, my dear Doctor, that not all of it is the result of my own personal observations. I have been essentially aided in this sketch by consulting the materials which have been collected on this interesting branch of ethnography by Mr. Berger, whose position in that part of the world has enabled him to gather correct data about the mountain tribes of the Caucasus, and who, I hope, will not slacken in his praiseworthy efforts of raising the veil which covers many a part of Daghestan, and dispelling the mist still brooding over the hilly regions of the East, fraught with so much interest to the inquiring ethnologist.*

5. *Address to the Geographical and Ethnological Section of the British Association at the Oxford Meeting of 1860.* By its President, SIR RODERICK IMPEY MURCHISON, D.C.L., F.R.S., Vice-President of the Royal and Royal Geographical Societies, and Director-General of the Geological Survey of the United Kingdom, &c.

LADIES AND GENTLEMEN,—During the last two years only, the President of each Section of the British Association having usually opened the business of the Meeting by a short address, it fell to my lot to offer a few words to the geographers and ethnologists who were assembled at Leeds in 1858. I there expressed the satisfaction I felt in proposing, at the Edinburgh Meeting in 1850, the formation of a separate Section for Geography and Ethnology, to occupy the place left vacant by our Medical Associates who had seceded to found an association of their own.

Until that year geography had been attached exclusively to the Geological Section, in which it was almost submerged by the numerous memoirs of my brethren of the rocks, whilst Ethnology, forming a Sub-Section, with difficulty obtained a proper place of meeting. Now, however, both these sciences are, I am happy to say, fully represented; and I trust that the result of the coming week will show, that the subjects to be illustrated will attract so many members to our hall as will prove that Geography, in its comprehensive sense, is as popular in Oxford as it is in the metropolis.

Before I enter upon the consideration of any memoirs which may be laid before us, let me allude to a few of the subjects of deep interest which have been illustrated by British Geographers in various parts of the world in the two years which have elapsed since I had the honour of last presiding over you.

In Africa, the earlier discoveries of that great traveller Livingstone have been followed by other researches of his companions and himself, which, as far as they go, have completely realized his anticipation of detecting large elevated tracts, truly *Sanatoria* as compared with those swampy and low regions near the coast, which have impressed too generally on the minds of our countrymen the impossibility of sustaining a life of exertion in any intertropical region of Africa. The opening out of the Shiré river, that grand affluent of the Zambesi, with the description of its banks and contiguous lofty terraces and mountains, and the discovery of the healthfulness of the tract, is most refreshing

* Since these lines were penned, the military operations on the left flank of the Caucasus have been carried on with so much success by the present General-in-Chief, Prince Bariatinsky, that Daghestan has surrendered to the power of Russia.

knowledge, the more so as it is accompanied by the pleasing notice that the slave trade is there unknown, except by the rare passage of a gang from other parts. Again, this portion of the country so teems with rich vegetable products, including cotton, and herds of elephants, as to lead us to hope that the spirit of profitable barter, which powerfully animates the natives, may lead to their civilization, and thus prove the best means of eradicating the commerce in human beings.

Whilst Livingstone was sailing to make his last venture and to realize the promise he had given to his faithful Macololo friends, that he would return to them, and bring them kind words from the Queen of the people who love the black man, Captains Burton and Speke were returning from their glorious exploits in a more central and northern region of South Africa, where they had discovered two great internal lakes or fresh-water seas, each of not less than 300 miles in length.

I may here notice, to the honour of our Government, and particularly to that of the present Secretary for Foreign Affairs, that Captain Speke, associated with another officer of the Bengal army, Captain Grant, has received 2500*l.*, to enable him to terminate his examination of the great Nyanza Lake, under the Equator; and we have reason to hope that he will find one of the chief feeders of the White Nile flowing out from its northern extremity, and thus determine the long-sought problem of the chief source of that classic stream.

I also trust that in the last and most arduous portion of his efforts in proceeding northwards he will be assisted, through the co-operation of Her Majesty's Consul at Khartúm on the Upper Nile, in traversing the country immediately to the north of the Equator, where no traveller, ancient or modern, has ever penetrated, and which is inhabited by wild and barbarous natives. After a residence of sixteen years in that region, and having made many trading expeditions to the confines of this unknown region, that bold and experienced man, Consul Petherick, is, I am persuaded, the only European who can afford real assistance to Captains Speke and Grant; and if by their united efforts the true source or sources of the Nile should be discovered, Britain will have attained a distinction hitherto sought in vain from the days of the Roman empire.

During the week of our meeting, Mr. Petherick will bring before us his project, which I trust you will support,* either for ascending the Nile to its source or affording assistance to Captain Speke, without which it is much to be feared that the gallant officer will never be able to traverse the savage tracts which intervene between the Nyanza Lake and the highest part of the Nile as yet known to any traveller.

If we turn to the Polar Circle, we see what individual British energy has been able to elicit from the frozen north. There, indeed, notwithstanding many a well-found expedition sent out to ascertain the fate of Franklin, all our efforts as a nation had failed, when the energy and perseverance of a woman, backed only by a few zealous and abiding friends, accomplished the glorious end of satisfying herself, and of proving to her admiring country, that in sacrificing their lives her heroic husband and his brave companions had been the first discoverers of the North-West Passage.

For her noble and devoted conduct in having persisted through many years of her life to send out expeditions at her own cost, until she at length unravelled the fate of the *Erebus* and *Terror*, the Royal Geographical Society of London has rightly judged, in awarding to Lady Franklin one of its gold medals, whilst the other has been appropriately given to that gallant and skilful officer Sir Leopold M'Clintock, who in the little yacht the *Fox* so thoroughly accom-

* A Subscription List in furtherance of this great object is opened, headed by Lord Ashburton and Sir Roderick Murchison.

plished his arduous mission. He not only ascertained the death of Franklin, and the subsequent abandonment of his ships, but also showed that the great navigator had discovered vast breadths of Arctic lands and seas which were entirely unknown when he left our shores, and had remained so until the truth was revealed by the expedition of the *Fox*.

The geographer who compares the map of the Arctic regions as laid down by Parry and others up to the year 1845, when Franklin sailed, and marks on it all that he is now known to have added in the two brief summers before he was beset, and then inspects any one of the most recent maps, even up to the year 1858 inclusive, and traces the discoveries made by M'Clintock and his associates, Hobson, Young, and Walker, will see what vast additions to geographical knowledge have been made by the last expedition of Lady Franklin.

Such services are indeed worthy of the highest national reward, and I have, I am happy to say, reason to know that a monument in commemoration of the glorious deeds of Franklin and of his having been the first to discover a North-West Passage will be erected, and that the officers and crew of the *Fox* will receive that recompense to which they are so justly entitled at the hands of their admiring countrymen.

Whilst on this subject I may well express the satisfaction and pride I feel, as the President of this Section, that the officers of the British Association have asked us, the Geographers, to bring forward one of our distinguished men to deliver a lecture on some one of our manifold subjects before the body of men of science assembled at Oxford. As this is the second* occasion since our foundation on which geographical discovery has been considered to be of sufficient scientific importance to occupy the attention of the whole meeting, I rejoice in the fact, and also in the knowledge that Captain Sherard Osborn, so well known to us through his charming 'Arctic Stray Leaves,' and other books, as well as by his laurels won in the Crimea, the Sea of Azof, and in China, is to be the lecturer, and that he who is so experienced an iceman is to give us a sketch of the discoveries of Franklin, as laid open by the last researches of Sir Leopold M'Clintock.

And here I may well say that every justice will be done to any subject connected with the condition of icy seas, including the proposed submarine telegraph by the Faroe Islands, Iceland, and Greenland to Labrador; for never at any of our former meetings have I seen so many explorers met together who have rendered their names eminent through Arctic and Antarctic discoveries. Under their observation the paper which is to be brought before us by Captain Parker Snow of the merchant marine, warmly urging a further search to recover the precious scientific records of the *Erebus* and *Terror*, will be ably scrutinised. The names of Admiral Sir James Ross, Sir Edward Belcher, Captains Ommaney and Sherard Osborn, when united with those of Sir J. Richardson and Dr. Rae, are truly guarantees that the question will have so much light thrown upon it as will either satisfy the public that no additional important results as respects the lost expedition can be achieved, or will stimulate us to fresh exertions. For, though all the Arctic voyagers with whom I have conversed are satisfied that there is now no hope of saving a human life, still every man of science must wish that strenuous efforts should still be made to recover, if possible, some more of the many scientific records of the lost expedition which may have been left in various places around the spot where Franklin breathed his last.

In the vast possessions of British North America much additional knowledge has been gained by the successful explorations of Palliser and his associates

* At the Dublin Meeting (1857), our Associate Dr. Livingstone lectured on his great African discoveries.

Hector, Blakiston, and Sullivan, not only as respects the great fertile prairies watered by the Saskatchewan and its affluents, but also touching the practicability of traversing the Rocky Mountains within our territories by passes lower than any which exist to the south of the boundary of the United States.

At this stage of our inquiries it would be hazardous to speculate on these passes being rendered available for railroads; the more so, as the wild region lying to the west of the Rocky Mountains—*i. e.* between them and those parts of British Columbia which are gold-bearing, and are beginning to be inhabited by civilized people—is as yet an unexplored woody region. We may hope, however, that such routes of communication will be established as will connect the Red River Settlements with the prairies of the Saskatchewan, and these last with the rich auriferous tracts of British Columbia. And if the most northern lines be found too difficult for railway communication, through the severity of the climate and physical obstacles, let us hope that by giving and taking ground in an amicable manner with our kinsmen of the United States, we may be enabled by a more southern railroad to traverse the prairies on either side of the neutral boundary, and then pass down the river Columbia to Vancouver Island. By this operation the great Gulf of St. Lawrence and Hudson Bay on the east may eventually be placed in communication with the noble roadsteads of Vancouver Island and the adjacent mainland on the Pacific. At all events, Britain will doubtless not be slow in establishing communications between the Atlantic and Pacific, first by the electric telegraph, next by ordinary roads, and finally, it is to be hoped, in part at least by railroads.

On these subjects we are to be favoured at this Meeting with a paper by Captain Synge, in addition to the *viva voce* communications of Captain Palliser and his associates.

Having not as yet had access to many of the papers which are to be communicated to this Section, I can allude to a few more of them only. In a Memoir on the Geographical Distribution of Plants in Asia Minor and Armenia by my distinguished friend M. Pierre de Tschihatchef, you will find some remarkable results as flowing from the long-continued researches of that ardent and successful traveller. After accounting for the absence of some plants and the profusion of others in given localities as dependent on climatal conditions (an example of which is, that the grape there flourishes in one tract at the great height of nearly 6000 feet above the sea), M. de Tschihatchef brings out some striking statistical data, showing the vastly greater abundance and variety of vegetation in Asia Minor, compared with that of any other country. He points out that the plants of five mountains only amount in number to double the entire quantity of British plants, and concludes with an eloquent regret that these classical regions, so blessed by the hand of the Creator, and which in the earlier history of mankind were replete with highly civilised communities, should now, through misgovernment, be the scene of oppression and barbarity.

Another distinguished Russian geographer, M. N. Khanikof, who has explored large portions of Persia and the adjoining countries, will bring before us his maps and descriptions of the mountainous tracts of the countries of the southern parts of Central Asia, where the lofty mountains of Ararat, Demavend, and Savalan form the chief elevations of the region to which we look as the cradle of our race.

But, to revert to subjects connected with Britain, in no portion of the surface of the globe have we made such great and rapid advances as in Australia. Doubtless much of this progress in settlement and civilization, particularly in Victoria, is due to the discovery of those enormous masses of gold which are producing far and wide such powerful effects. But looking to the work of purely geographical pioneers, I can declare that some of the most valuable and daring researches, from the earliest days to the present time, have been completed

wholly irrespective of profits gained through the attraction of the precious metal. The great discoveries of Sturt, Eyre, and Leichhardt were made before the existence of gold was known; and even now, when it is the most seductive of baits to entice the traveller, see what vast regions the brothers Gregory have laid open in Northern, Eastern, and Western Australia, without the recompense of a single yellow nugget. Again: look to South Australia, where gold is scarcely known—at least, in any appreciable quantity—and see what its inhabitants have done in pushing far into the interior, simply to acquire fresh pasture-lands. In contemplating these recent discoveries we read with astonishment of what one individual, Mr. M'Dougall Stuart, has accomplished in so short a time, and of the privations he underwent to realize the existence of fresh-water streams and oases on the borders of the great interior saline desert.

Still more were we surprised when we learned that this great continent, the rivers of which were so long considered to be useless, has had its one mighty stream, the Murray, rendered navigable for 1800 miles. With its affluents, the Darling and Murrumbidgee, this river may indeed be said to have been laid open for 2500 miles, *i. e.* between many new towns which have sprung up in the interior and the sea; and all this by the clearing away of the stems and stumps of trees, the result of ages of decay.

There are now, indeed, in England some of the eminent men, whether governors, statesmen, or explorers of this great colonial region, who will, I hope, before we adjourn, throw fresh light on these recent discoveries.

Having presided for several years over the Royal Geographical Society, it has been my duty to pass in review the progress made by the sons of Britain in different parts of the world, and it has ever been to me a source of the sincerest gratification to watch the rapid strides made by the colonists of Australia, and to observe how they have carried with them all the energy of our race into the land of their adoption. If I traced with deep interest the explorations of their boldest travellers through the bush, and witnessed with delight the working out of that golden wealth, of which perhaps, because I was a Highlander as well as a geologist, I had a sort of *second sight*; or if I revelled in seeing their ports filled with ships and abounding in commerce; not all these attributes have rejoiced me more than the knowledge I acquired that our Australian colonists are truly and sincerely attached to Britain and their Sovereign.

As it is out of my power on the present occasion to advert to all the recent advances in ethnology, I will now only say that, besides many communications from other gentlemen, including Mr. Lockhart's excellent notes on China, my eminent and valued friend Mr. John Crawford will give us two memoirs: the one, 'On the Relation of the Domesticated Animals to Civilization'; the other, 'On the Aryan or Indo-Germanic Theory'; each of which will, I doubt not, be worthy of the President of the Ethnological Society of London.

Let me, however, offer a few general observations on those sciences, to the cultivation of which the business of this Section is devoted. Geography, regarded only as the description of the outlines of the earth and the determination by astronomical observations of the relative position of hills, rivers, and valleys, to be laid down by the topographer on a map, is but the key-stone of that splendid science when viewed in its most comprehensive bearings. For, of how much real value is it deprived if not followed in its train by all the affiliated sciences which relate to the phenomena of our mother earth! How infinitely is the important basis of our science enriched by the descriptions of the animals and plants which, teeming on the surface of our planet, are distinguished by forms peculiar to each region,—such distribution being coincident with relative differences of climate!

Again: as a weatherbeaten geologist, I know full well that the science which I have most cultivated would be void of a foundation, if it did not rest on the principles of physical geography; for much of the labour of the geologist consists in restoring, not in imagination, but by a positive appeal to data registered on tablets of stone, the former outlines of sea and earth at different successive periods, whilst he marks the various oscillations of land and water, as well as the necessary accompaniments of grand meteorological changes.

If, therefore, the geographer is guided to the relative position of his localities by the lights of astronomy, he also knows that accurate observation of all terrestrial changes is of the highest value in enabling his close ally the geologist to interpret and read off the former conditions of the crust of the earth. For, just as geography in its present phase is necessarily connected with ethnology, so its earliest features as a science can best be thoroughly comprehended by the geologist. His is the province to bring to the mind's eye the various relations of land and water through the olden periods, when most of our present continents were formed beneath the sea, and to trace the successive elevations and depressions which characterized epochs long anterior to the existence of man. Even in those remote times, when some lands were elevated and others depressed, we have ascertained that the waters and the earth were occupied by various animals which successively lived and died, to be followed by other and more highly organized races, until at length a being endowed with reason was created.

And when, having gone through all the long epochs of geological time, we approach the period when man appeared, how interesting is it to endeavour to unravel the changes which our lands underwent from that recent geological date when the British Isles formed part of the terra firma of Europe! Then, at a later period, how inciting is it to mark the signs of the commixture of the rudest and earliest works of man with the remains of animals, most of which are now extinct, yet mixed up with others which have lived on to our own day!

Thus, whilst the geological geographer who visits the banks of the Somme, sees such an assemblage of relics beneath great accumulations formed by water (as I have recently witnessed myself), he is compelled to infer, that at the period when such a phenomenon was brought about, the waters which have now diminished to an ordinary small river, rose great inundations to the height of one hundred feet and more above the present stream, and swept over the slopes of the chalk on which the primeval inhabitants were fashioning their rude flint instruments,—when, as I would suggest, they escaped to the adjacent hills, and, saving themselves from the sweeping flood, left no traces of their bones in the silt, sand, or gravel.

This linking on of geology with human history and the works of primeval art comes legitimately under our consideration; and here we have just as full right to discuss and test this question as my dear friends the geologists; the more so, as it was to this connection between geology and history that Lord Wrottesley called the attention of the Association in his Presidential Address.

Then again, as we descend with the stream of time until we reach historical records, the geographer next endeavours to throw light on the marches of the great generals of antiquity and the sites of ancient cities; and then truly the geologist, geographer, and ethnologist become united with the antiquary and historian. Taking our recent British example of the discovery of the Uriconium of the Romans at Wroxeter in Shropshire, where is the geographer who has looked at the mounds of earth which till recently covered that ancient city, and is not convinced that causes arising from the combined destruction by man and natural decay have produced the mass of overlying matter on the shores of the Severn which has hidden from our vision one of the famous Roman towns of Britain? As I have delighted in tracing the sites

of the battles of our great British chief, Caractacus,* and in unravelling the age of those Silurian rocks in which he made the chief defences of his own kingdom, so I can now bring back to my imagination how the legions of Ostorius were reinforced from that Uriconium which has just been disinterred from its earthy covering by the zealous labours of the enlightened antiquary Wright, now a Secretary of this Section.

In this manner we see, that as our inquiries necessarily stimulate us on the one hand to recede to the very earliest traces of man upon the globe, so, on the other, we are led on into that department of art and archæology which connects the present with the past, and are thus enabled to offer to the consideration of our associates and auditors subjects of prevailing and universal interest—subjects which will, I doubt not, be handled with redoubled zest, now that we are again happily met together for the third time in this very ancient seat of learning.

In conclusion, Ladies and Gentlemen, I have now only to congratulate you on the recent rapid extension of geographical science throughout the enlightened classes of our countrymen. Brought up with a profound reverence for the works of God, and a due admiration of the finest efforts of man, those sons of our gracious Sovereign who are of sufficient age to profit by extensive travel are already proving that, in their spirit of adventure, they are true Englishmen. The heir to the Crown, after rambles in our Scottish Highlands and travels on the Continent, is about to quit this his Alma Mater, and, to the great joy of our colonists, to visit North America, and there rivet still more strongly the link which binds the loyal people of those provinces to the mother country; whilst Prince Alfred, after cruising in the Mediterranean, is now sailing across the Southern Atlantic to Bahia, not without having on his way ascended to the summit of the Peak of Teneriffe. The willing co-operation of the last and present President † of the Royal Geographical Society demonstrates that our nobility are as much alive to the vast importance of our subject as the middle classes of the community. On my own part, having laboured zealously in diffusing geographical knowledge among my countrymen, I can give you no stronger proof of my satisfaction than by declaring that my gratification is now complete in seeing that this Section is second in popularity and utility to no branch of the British Association.

The BISHOP OF OXFORD, in an eloquent speech, moved, That the Address be printed; and the motion, having been seconded by Admiral FitzRoy, was adopted by the Section.

* See the Preface to the 'Silurian System.'

† Earl de Grey and Ripon, and Lord Ashburton.